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2.4 HW

p78-79 13, 14, 17-19, 21, 29-35 odd, 36, 38 + word problems

13. $m = -\frac{2}{3}$ $b = -4$

(14) $m = \frac{3}{4}$ $b = 0$

17. undefined no y-int

(18) $y = -cx + d$

$m = -c$ y-int d

19. $b = 0$ $\boxed{y = \frac{4}{5}x}$

$m = \frac{2}{2.5} = \frac{20}{25} = \frac{4}{5}$

(21) $\boxed{y = -4}$

29. $(-2, 5)(3, 1)$

$m = \frac{5-1}{-2-3} = \frac{4}{-5}$

$y = \frac{-4}{5}x + b$

$1 = \frac{-4}{5}(3) + b$

$\frac{5}{5} = \frac{-12}{5}$

$\frac{17}{5} = b$

$\boxed{y = \frac{-4}{5}x + \frac{17}{5}}$

(31) $(-4, 0)(3, 0)$

$m = \frac{0}{} = 0$

$y = 0x + b$

$\boxed{y = 0}$

(35) $(4, 6) \parallel y = \frac{2}{3}x + 5$

$m = \frac{2}{3}$

$y = \frac{2}{3}x + b$

$6 = \frac{2}{3}(4) + b$

$\frac{18}{3} = \frac{8}{3} + b$

$\frac{10}{3} = b$

$\boxed{y = \frac{2}{3}x + \frac{10}{3}}$

33. $(-4, 0)(0, 4)$

$m = \frac{4-0}{0-(-4)} = \frac{4}{4} = 1$

$\boxed{y = x + 4}$

36 $(2, -5) \perp y = \frac{1}{4}x + 7$

$m = -4$

$-5 = -4(2) + b$

$3 = b$

$\boxed{y = -4x + 3}$

(38) $(-3, -1) \parallel (3, 3)(0, 6)$

$m = \frac{6-3}{0-3} = \frac{3}{-3} = -1$

$m = -1$

$-1 = -1(-3) + b$

$-4 = b$

$\boxed{y = -x - 4}$

NAME Key Date

Linear Variation Word Problems

1. The present population of Whitehall is 47,000. The population increases by 550 each year. Express the population (P) in (t) years. Use the function to find the population in 30 years. In 38 years.

$P = 550t + 47000$

(38 yrs) 67,900

63,500 (30 yrs)

2. A telephone company charges $12 per month plus $.10 for each local call. Express the monthly bill (B) in terms of the number of calls (c). What would the bill be if there were 47 local phone calls?

$B = .1c + 12$

47 calls $16.70

3. A ranger calculates there are 6,000 deer in a preserve. She also estimates that 75 more deer die than are born each year. How many deer will be in the preserve in x years? In how many years will the preserve be empty?

$D = -75x + 6000$ $0 = -75x + 6000$

$x = 80$ yrs

4. Fahrenheit temperature F varies linearly as Celsius temperature C. Find a formula for F in terms of C, if 0° C = 32° F and 100° C = 212° F. (Hint: Use a set of ordered pairs: (C, F), (0, 32) and (100, 212).) Use your function to convert 65°C to °F.

$m = \frac{212-32}{100-0}$ $\frac{180}{100} = \frac{9}{5}$ $F = \frac{9}{5}C + 32$

65 °C → 149 °F

5. The Delaware River is found to have 4,800 ppm of bacteria. The EPA would like to decrease this by 500 ppm each year. Express the level of pollution in the river in terms of the time t. In theory, how long would it take to eliminate all of the pollution.

$P = -500t + 4800$ $0 = -500t + 4800$

9.6 yrs to eliminate

6. The employees at the Ace Repair Shop use the chart below to compute the customers' bills. Write an equation to describe the relationship between the number of labor hours and the charge. (Hint: use ordered pairs.)

Labor Hours	.5	.75	1	1.25	1.5	2
Charge	$29	$33.50	$38	$42.50	$47	$56

$m = \frac{56-38}{2-1} = \frac{18}{1}$ $C = 18L + 20$